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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,478

07/25/2006

Shinichi Nagata

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EXAMINER

VALONE, THOMAS F

ART UNIT

PAPER NUMBER

2858

MAIL DATE

DELIVERY MODE

08/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/566,478

Applicant(s)

NAGATA ET AL.

Examiner

Thomas F. Valone

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-10,12-14 and 17 is/are rejected.
- 7) ☒ Claim(s) 2-4,11,15,16 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/16/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 6 and by dependence 2-5, 7-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "circular" lacks antecedent basis in the specification. Furthermore, the drawings fail to show such a hole configuration and without support in the disclosure, the limitation "circular hole" constitutes new matter.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 6, 9, 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (4,297,874) in view of Shimizu (4,030,051).

Regarding claims 1, 6, and 9, Sasaki teaches a microwave cavity resonator device or method for measuring moisture content, with a slit in which a specimen

is disposed being placed in a manner so as to cross the resonator portion (Fig. 2), with a measuring frequency, used to determine moisture content based on a difference in resonance peak level between the cases when the specimen is not present in the slit and when it is present in the slit (col. 3, 30-39). Sasaki further teaches a resonator portion (cavity resonator 11, Fig. 2) since both ends are closed and traveling wave portions (16, 19, Fig. 2).

Sasaki does not teach two circular-holed iris plates which are arranged perpendicular to and spaced along the tube axis at mid-points of a wave guide, a portion between the iris plates forming a resonator portion and the outside of each of the iris plates forming traveling wave portions as in claims 1 and 6. Also, Sasaki does not teach the traveling wave portions of the microwave cavity resonator being adjacent to iris plates but at each end of the resonant portion, where his sweep oscillator (17, Fig. 2) and intensity receiver (20, Fig. 2) are connected, as in claim 9.

Shimizu from the same field of endeavor, teaches two single-holed iris plates which are arranged perpendicular to and spaced along a tube axis at mid-points of a wave guide, a portion between the iris plates forming a resonator portion and the outside of each of the iris plates forming traveling wave portions (Fig. 1). As to the predetermined range between 1 to 25 GHz, it is inherent to microwaves to operate in this range, because the resonant cavity size is half a wavelength, as suggested by Shimizu (col. 1, line 40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included Shimizu's iris plate design, which maximizes

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coupling to the specimen in the center, with a coaxial resonator portion separate from the traveling wave portion, setting a measuring frequency in a range between 1 and 25 GHz, as in claims 1 and 6 as well as to have the traveling wave portions, both sweep oscillator connection and intensity receiver connection, of the microwave cavity resonator being adjacent to Shimizu's iris plates, as in claim 9, because they are already at each end of Sasaki's resonant portion, which already includes a traveling wave portion separate from the resonator portion.

Sasaki and Shimizu (S-S) does not teach two circular-holed iris plates which are arranged perpendicular to and spaced along the tube axis at mid-points of a wave guide.

Osaki, from the same field of endeavor, teaches two circular-holed iris plates which are arranged perpendicular to and spaced along the tube axis at mid-points of a wave guide (Fig. 2 and Fig. 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included Osaki's iris plate design in the moisture detector of S-S, for the benefit of rotatably accommodating the iris holder about the axis, making it independent of rotation, as suggested by Osaki (col. 2, line 65-68).

As to claims 10 and 17, Sasaki teaches a one-sided flange (12₃, 13₃, Fig. 2 and col. 2, line 50) with the coaxial wave guide converter for the oscillator and the receiver (17, 20, Fig. 2) as in claim 10. However, applicant admits that wave guide converters with one-sided flanges are "commercially available" and "easily achieved" (p. 13, line 21).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki, Osaki and Shimizu (S-O-S), in view of Fitsky (4,203,067).

The teachings of S-O-S are reviewed above.

S-O-S does not include a consideration for temperature.

Fitsky teaches that frequency selection should be made to minimize the effect of temperature (col. 3, line 60-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a measurement, detection and correction of temperature dependency, as disclosed by Fitsky, in the microwave resonator of S-O-S, for the benefit of resonant frequency measurement accuracy.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki, Osaki and Shimizu (S-O-S), in view of Kich (4,677,403).

The teachings of S-O-S are reviewed above.

S-O-S does not include a consideration for small millimeter sized iris openings.

Kich discloses a microwave cavity resonator (comprising an iris 22 which divides a waveguide body into a pair of cavities 12a, 12b. The iris 22 has a 1.57 mm opening.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an iris opening in the range of 1 – 20 mm, as suggested by Kich, for the benefit of limiting the amplitude of the microwaves.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki, Osaki and Shimizu (S-O-S), in view of Nagata (6,496,018).

The teachings of S-O-S are reviewed above.

S-O-S does not include a consideration for the TE 101, 102, 103... modes or a maximum valued of the electric field vector.

Nagata from the same field of endeavor teaches a microwave cavity resonator 6 (Fig. 1) for measuring the dielectric constant comprising sample 10 provided in slit 8. The constant is measured with and without the sample being present. Nagata also discloses forming a TE mode as a resonant mode (Fig. 5A).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included TE101, 102, 103... modes or a maximum valued of the electric field vector, in the S-O-S system, based on the suggestion of Nagata, for the benefit of exposing the sample to the highest intensity microwave energy.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki, Osaki and Shimizu (S-O-S) further in view of Maeno (4,890,054).

The teachings of S-O-S are reviewed above.

S-O-S does not include continuous supply of the specimen to the slit, or the data processing device comprising a storage unit that stores a resonant peak level value for comparison of the presence and absence of the specimen for continuous moisture measurement.

Maeno teaches continuous supply of the specimen to the slit, and the data processing device comprising a storage unit (CPU 18, col. 6, line 20) that stores a resonant peak level value for comparison of the presence and absence of the specimen

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for continuous moisture measurement (production process being measured in an on-line manner, col. 4, line 9-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included Maeno's computerized continuous measurement with peak value comparison in the resonant cavity moisture measurement of the S-O-S system, for a production process, as suggested by Maeno.

9. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki, Osaki, Shimizu and Maeno (S-O-S-M) as applied to claim 12, and further in view of Fitsky.

Regarding claim 13, the teachings of S-O-S-M are reviewed above.

S-O-S-M does not include a temperature dependency value storage unit for resonant peak level storage, a temperature sensor, or a correction means that corrects the resonance peak value based on the detected temperature from the sensor.

Fitsky teaches that the effect of temperature is critical to shifting the absorption maximum (col. 3, line 60 – col. 4, line 5), suggesting a measurement and selection of temperature.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included Maeno's computerized continuous measurement with peak value comparison in the S-O-S resonant cavity moisture measurement, for a production process, including a temperature dependency value storage unit for resonant peak level storage, a temperature sensor, or a correction means that corrects the

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resonance peak value based on the detected temperature from the sensor, for the benefit of minimizing the effect of temperature, as suggested by Fitsky (col. 3, line 63).

Regarding claim 14, Sasaki includes a guide with a shape for guiding the specimen into the slit and attached to the end portion of the slit side on the outside face of the waveguide, which appears to be the E face of the cavity resonator (12₂, 13₂, Fig. 2).

Allowable Subject Matter

10. Claims 2-4, 11, 15, 16, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Acknowledgement is given for the amendments to the claims. As a result, the objection to the drawings and the claims have been withdrawn.

12. Applicant's arguments filed 6/6/07 have been fully considered but they are not persuasive.

The arguments center upon the admission that the primary reference teaches a cavity resonator for measuring the moisture content of a sheet-like object, while noting that the secondary reference fails to teach such an application. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the thirty-year old patent of Shimizu shows that creating resonator sections in a microwave cavity is an old idea. Furthermore, Shimizu does teach a specific reason and particular utility for this type of resonator (col. 1, line 12-45). As Shimizu refers to the coupling that is provided between the resonators with the apertures in the iris plates and the size dependence on the reactance necessary for the required bandwidth. It is also understood to one of ordinary skill that a fundamental resonant mode of wavelength coupling between the sections, provides for the resonant frequency. Therefore, Shimizu provides more than sufficient resonant frequency teachings to encourage one of ordinary skill in the art to utilize such a convenient filtering technique for a variable resonant frequency in a particular bandwidth suitable for moisture measurement.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features from Shimizu upon which applicant relies (i.e., raising the Q value) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The rest of the arguments seem to rely upon the secondary Shimizu reference perceived deficiencies and the alleged failure for the tertiary references to supply these

deficiencies. Since the Shimizu reference has been addressed above with an additional reference provided that is necessitated by amendment, this is a moot point.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas F. Valone whose telephone number is 571-272-8896. The examiner can normally be reached on 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on 571-272-2168. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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